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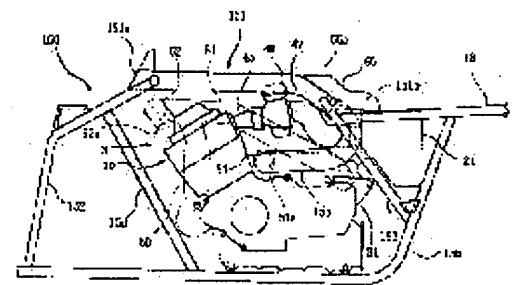
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## (54) COOLING STRUCTURE OF BELT CHAMBER OF VEHICLE FOR OFF-ROAD TRAVEL

### (57)Abstract:

PROBLEM TO BE SOLVED: To provide a cooling structure of the belt chamber of a vehicle for off-road travel, which is capable of preventing water from entering the belt chamber.

SOLUTION: This cooling structure is so designed that right and left front wheels and right and left rear wheels are mounted respectively on the front and rear of a body frame 150; a fuel tank and a saddle type seat are mounted between the front and rear wheels on the body frame 150 in that order from in front; an engine 30 is installed below the fuel tank; and a V-belt type continuously variable transmission 31 is placed on the side of the engine 30. In this case, an air inlet 151a and an air outlet 151b are formed respectively near the front and rear ends of a tank rail 151 made of pipe which is located below the fuel tank on the body frame 150, with the air outlet 151b connected to the air intake 51a (belt chamber) of the V-belt type continuously variable transmission by a cooling air duct 155.



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## CLAIMS

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### [Claim(s)]

[Claim 1] It is the left to the anterior part of a car-body frame, About a right front wheel, it is the left to the back, a right rear wheel is attached. Before this car-body frame, while carrying a fuel tank and a saddle riding mold sheet sequentially from before between rear wheels, an engine is carried down this fuel tank. In the belt room cooling structure of the car for irregular ground transit which arranged the V belt type infinite variable-speed drive in the flank of this engine While forming an air inlet near the front end of the tank rail made from a pipe located in the fuel tank lower part of the above-mentioned car-body frame, an air outlet is formed near the back end. Belt room cooling structure of the car for irregular ground transit characterized by connecting this air outlet and the belt room of the above-mentioned V belt type infinite variable-speed drive by the cooling air duct.

[Claim 2] It is the left to the anterior part of a car-body frame, About a right front wheel, it is the left to the back, a right rear wheel is attached. Before this car-body frame, while carrying a saddle riding mold sheet between rear wheels, an engine is carried under this sheet. In the belt room cooling structure of the car for irregular ground transit which arranged the air cleaner behind this engine, connected this air cleaner and the carburetor with the air intake duct, and arranged the V belt type infinite variable-speed drive in the flank of the above-mentioned engine Form the above-mentioned air cleaner by the septum in an inhalation-of-air room and a cooling air room, and this inhalation-of-air room is connected with the above-mentioned carburetor with an air intake duct. Belt room cooling structure of the car for irregular ground transit characterized by connecting the above-mentioned cooling air room with the above-mentioned belt room by the cooling air installation duct, having been mutually isolated in the inhalation-of-air room and cooling air room of the above-mentioned air cleaner, and locating in them the air inlet of the inhalation-of-air path which introduces air independently, respectively, and a cooling air path.

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## DETAILED DESCRIPTION

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### [Detailed Description of the Invention]

#### [0001]

[Field of the Invention] This invention relates to the cooling structure of the belt room of the car for irregular ground transit equipped with the V belt type infinite variable-speed drive.

[0002] Generally, the car for irregular ground transit arranges a wheel with a broad low voltage tire (balloon tire) before and after a car-body frame, and before this, an engine is carried down this fuel tank and it is constituted while carrying a fuel tank and a saddle riding mold sheet between rear wheels. Moreover, by the above-mentioned car, a V belt type infinite variable-speed drive may be arranged to an engine flank.

[0003] Generally the V belt adopted as this kind of V belt type infinite variable-speed drive is a product made of synthetic rubber, and its thermal resistance is comparatively low and it tends to deteriorate with frictional heat etc. For this reason, he introduces a transit wind in the belt case where the V belt was held, and is trying to cool.

#### [0004]

[Problem(s) to be Solved by the Invention] By the way, the above-mentioned car for irregular ground transit may be used for underwater transit to the extent that a wheel carries out abbreviation submersion, considering the application. therefore -- the car which equipped the above-mentioned engine flank with the V belt type infinite variable-speed drive -- arrangement of the intake of the cooling air to a belt case -- water trespasses upon the belt interior of a room depending on how, and there is a possibility that a V belt may deteriorate. Moreover, in case cooling air is introduced into the belt interior of a room, dust and a contaminant may enter and there is a problem that a V belt deteriorates also from this point.

[0005] This invention aims at offering the belt room cooling structure of the car for irregular ground transit which can prevent that dust and a contaminant enter while it was made in view of the above-mentioned situation and can prevent trespass of the water to the belt interior of a room.

#### [0006]

[Means for Solving the Problem] Invention of claim 1 is the left to the anterior part of a car-body frame, About a right front wheel, it is the left to the back, a right rear wheel is attached. Before this car-body frame, while carrying a fuel tank and a saddle riding mold sheet sequentially from before between rear wheels, an engine is carried down this fuel tank. In the belt room cooling structure of the car for irregular ground transit which arranged the V belt type infinite variable-speed drive in the flank of this engine While forming an air inlet near the front end of the tank rail made from a pipe located in the fuel tank lower part of the above-mentioned car-body frame, an air outlet is formed near the back end, and it is characterized by connecting this air outlet and the belt room of the above-mentioned V belt type infinite variable-speed drive by the cooling air duct.

[0007] Invention of claim 2 is the left to the anterior part of a car-body frame, About a right front wheel, it is the left to the back, a right rear wheel is attached. Before this car-body frame, while carrying a saddle riding mold sheet between rear wheels, an engine is carried under this sheet. In the belt room cooling structure of the car for irregular ground transit which arranged the air cleaner behind this engine, connected this air cleaner and the carburetor with the air intake duct, and arranged the V belt type infinite variable-speed drive in the flank of the above-mentioned engine Form the above-mentioned air cleaner by the septum in an inhalation-of-air room and a cooling air room, and this inhalation-of-air room is connected with the above-mentioned carburetor with an air intake duct. The above-mentioned cooling air room is connected with the above-mentioned belt room by the cooling air duct, and it is characterized by having been mutually isolated in the inhalation-of-air room and cooling air room of the above-mentioned air cleaner, and locating in them the air inlet of the inhalation-of-air path which introduces air independently, respectively, and a cooling air path.

#### [0008]

[Function and Effect of the Invention] Since according to the belt room cooling structure concerning invention of claim 1 the air inlet was formed near the front end of the tank rail which passes along a fuel tank lower part, the air outlet was

formed near the back end and this air outlet and the belt room were connected by the cooling air duct. Since cooling air is extracted by the part where temperature is low that it is hard to receive engine heat called near the front end of a tank rail and this was supplied to the belt interior of a room through the tank rail. Air with low temperature can be supplied to a belt room, without causing the complexity of structure, the belt interior of a room can be cooled efficiently, and it is effective in the endurance of a V belt being securable.

[0009] And also when underwater transit which is like [ to which the air inlet near the front end of the above-mentioned tank rail is located in a height from the wheel, therefore a wheel sinks in this case ] is performed, an air inlet does not sink and trespass of the water to the belt interior of a room can be prevented, and it is effective in the endurance of a V belt being securable also from this point.

[0010] Since according to invention of claim 2 the air cleaner was formed in the inhalation-of-air room and the cooling air room and this cooling air room and the belt room were connected with the cooling air duct, cooling air can be filtered using the air cleaner for combustion airs formed from the former, the this filtered cooling air is supplied to the belt interior of a room, dust and the trespass to the Mino belt interior of a room can be prevented, and it is effective in the endurance of a V belt being securable.

[0011] Moreover, since the air inlet of the inhalation-of-air path which introduces the open air into the inhalation-of-air room of the above-mentioned air cleaner and a cooling air room, and a cooling air path was made to isolate mutually, the inhalation-of-air interference by the difference of the depression at engine manifold of an engine and a belt room can be avoided, and there is effectiveness which is stabilized and can supply cooling air to a belt room.

[0012]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained based on an accompanying drawing. Drawing 1 thru/or drawing 22 are drawings for explaining the belt room cooling structure of the four-flower vehicle for irregular ground transit by 1 operation gestalt of invention of claim 2. A right side view, a top view, a front view, drawing 4 - drawing 6 drawing 1 - drawing 3, respectively. The left side view of a car-body frame, a bottom view, a back top view, The left side view, sectional view in which drawing 7 R> 7 and drawing 8 show the engine guard anchoring part of a car-body frame, The left side view in which drawing 9 and drawing 10 show the car-body back of a seat rail, rear view, and drawing 11. The sectional view of the cross pipe for engine mounts, The sectional view in which drawing 12 shows the arrangement structure of a starter, the right side view in which drawing 13 - drawing 15 show V belt room cooling structure, respectively, a top view, a front view, The top view in which the left side view in which drawing 16 R> 6 - drawing 18 show the circumference of the fuel tank of a suction system, respectively, a front view, a top view, drawing 19, and drawing 20 show hood board attaching structure, a right side view, drawing 21, and drawing 22 R> 2 are the sectional views of a fender. In addition, the right and left as used in the field of this operation gestalt and order mean the right and left at the time of seeing in the condition of having sat down on the sheet, and order.

[0013] In drawing, 1 is a four-flower motorbike for irregular ground transit, and this is the thing of the outline structure which carried the engine unit 3 in the center section of the car-body frame 2, and arranged the steering handle 4, the fuel tank 5, and the saddle riding mold sheet 6 in the upper part sequentially from before. The front-wheel suspension system 7 is minded [ of the above-mentioned car-body frame 2 ], and it is the left, The right front wheel 8 with a balloon tire minds the rear wheel suspension system 9 again, and it is the left, It is equipped with the right rear wheel 10 with a balloon tire, and the before fender 11 and the after fender 12 are arranged above this front wheel 8 and the rear wheel 10, respectively. Moreover, the front bumper 13 made from a steel pipe is arranged by the front end of the above-mentioned car-body frame 2.

[0014] The above-mentioned car-body frame 2 is the left as shown in drawing 4 - drawing 6, Left which joins the side frame 15 of the shape of a cradle of a right couple by two or more cross members 17, and extends at the back of each side frame 15 in car-body back, While connecting the seat rail 18 of a right couple, it is the so-called double cradle type of thing which comes to construct the rear cross member 16 between the center sections of this seat rail 18.

[0015] Each above-mentioned side frame 15 has structure which constructed down tube 15d which inclines in a back slanting lower part among anterior part while it connects undershirt pipe 15b prolonged in car-body back, and upper pipe 15c to the left which extends in the vertical direction, the soffit of right anterior part pipe 15a, and an upper bed and combines the backs of both the pipes 15b and 15c. This undershirt pipe 15b and upper pipe 15c are the things of a cross-section square shape, and this undershirt pipe 15b is formed in the shape of a straight line by side view, and they incline in the before riser slightly. The dip of a before [ this ] riser is for making this obstruction easy to miss back, when an obstruction hits undershirt pipe 15b at the time of transit.

[0016] Each above-mentioned cross member 17 is formed in the shape of [ which carries out opening caudad ] a cross-section profile hat. By having made it this configuration, it is possible to attach direct picking through the mounting bracket of dedication of each part article later mentioned to this each cross member 17, and while this aims at

improvement in frame reinforcement, the cutback of components mark is in drawing. Moreover, it has prevented that muddy water etc. collects on this cross member 17 by having carried out opening of the above-mentioned cross member 17 caudad. Incidentally, the conventional cross member is making the circular cross section, and there was a problem that the mounting bracket of dedication was separately required for the cross member of this round shape for attaching components, and components mark increased.

[0017] As shown in drawing 7 and drawing 8, the engine guard 19 made from a sheet metal is arranged by the anterior part underside of the above-mentioned undershirt pipe 15b, and this engine guard 19 is being bound tight and fixed to it by the above-mentioned cross member 17 by bolt 19b. Crookedness formation of this engine guard's 19 front end section 19a is carried out in the upper part so that the above-mentioned front bumper 13 and an abbreviation continuation side may be made by side view, and this front end section 19a is being bound tight and fixed to the bumper 13 by bolt 19c.

[0018] The above-mentioned rear cross member 16 is the thing of the abbreviation rectangular pipe form which comes to also join broad plate member 16b which blockades this opening in member member 16a of the shape of a KO character which carries out opening caudad in the shape of inside (refer to drawing 9), and the upper bed section of rear-suspension 9a of the rear wheel suspension system 9 is connected with this rear cross member's 16 underside through the bracket 20 of the shape of a cross-section hat which carries out opening to back. Moreover, left of the above-mentioned plate member 16b, In the right both-sides section, projection formation of the stay section 16c is carried out at one, and bolting immobilization of the back end section of the air cleaner 21 later-mentioned to this stay section 16c is carried out (refer to drawing 6 and drawing 9).

[0019] Between the back end section of the seat rail 18 of the above-mentioned left-hand side, and the upper part of undershirt pipe 15b, it builds and is joined so that the buckstay 25 of the shape of a cross-section hat which carries out opening outside may make a triangle. bracket section 25a for this buckstay 25 being a press-forming article, and attaching two or more electric equipment articles .. is really formed of press forming, and while this aims at the cutback of components mark, improvement in the support reinforcement of the above-mentioned seat rail 18 is in drawing. Incidentally, the conventional buckstay has the circular cross section and had the problem that a mounting bracket was separately required to attach an electric equipment article in this, and components mark increased.

[0020] Moreover, the above-mentioned left, The receipt box 26 is arranged between the back end sections of the right seat rail 18. This receipt box 26 is the left and the left fixed to the right seat rails 18 and 18, It is bound tight and fixed to the right stay 26a and 26b by bolt 26e. Right-hand side stay 26a is formed in the cross-section L typeface, and is in contact with the top face the horizontal \*\*\*\* 26c of whose is 26d of steps of the receipt box 26 here. It has prevented that the receipt box 26 rotates to the circumference of the shaft of the above-mentioned bolt 26e by this (refer to drawing 9 and drawing 10 ).

[0021] The above-mentioned engine unit 3 equips the crosswise right flank of the engine 30 of water cooling type four-cycle juxtaposition 2 cylinder, and this engine 30 with the V belt drive type infinite variable-speed drive 31 by which joint arrangement was carried out. This engine unit 3 turns a crankshaft 32 to the cross direction, is carried in the car-body frame 2, and is supported with each brackets 33a and 33b which fixed to above-mentioned down tube 15d and each cross member 17. In addition, the above-mentioned engine 30 has structure which carried out laminating conclusion of cylinder block 30b and the cylinder head 30c on the anterior part top face of crank-case 30a in which the above-mentioned crankshaft 32 was held.

[0022] The above-mentioned cylinder head 30c is the left, It is supported with the cross pipe 34 constructed between right upper pipe 15c and 15c. As this cross pipe 34 is shown in drawing 1111, it is what joined plate member 34b to the ends of body material 34a arranged at the same height as upper pipe 15c, and conclusion immobilization of this plate member 34b is carried out removable with the bolt 36 at the bracket 35 joined to the top face of the above-mentioned upper pipe 15c.

[0023] Since the above-mentioned cross pipe 34 was constituted removable, upper pipe 15c, as a result a seat rail 18 can be arranged in a low location, improving the attachment-and-detachment workability at the time of carrying the engine unit 3 in the car-body frame 2, or removing it. That is, this cross pipe 34 does not become the obstacle of an activity by removing the above-mentioned cross pipe 34 from the car-body frame 2 at the time of an engine attachment-and-detachment activity. Moreover, when the cross pipe 34 is made fixed, in order to avoid that this cross pipe 34 becomes the obstacle of an engine attachment-and-detachment activity, it is necessary to arrange this cross pipe at a height, and, as a result, upper pipe 15c and a seat rail 18 must be made high.

[0024] The starter 42 is arranged for the oil filter 41 by a crankshaft 32 and parallel at the front wall again at the left side attachment wall of the above-mentioned crank-case 30a, respectively. This starter 42 is the above-mentioned left, as shown in drawing 12, It is between bracket 33a for engine support of the couple concluded by right down tube 15d, and is arranged in 30d of crevices of crank-case 30a. Thus, since the dead space by the side of before an engine was

used effectively, a starter 42 can be arranged in a compact.

[0025] In it, the exhaust pipe 37 is prolonged through the right side of the upper part of an engine 30 in car back, after a connection \*\*\*\* cage and this exhaust pipe 37 are drawn ahead [ car-body ] by the front wall of the above-mentioned cylinder head 30b, and the silencer 38 is connected to the back end section of this exhaust pipe 37. As this silencer 38 is shown in drawing 10, it is arranged on the outside of the right-hand side seat rail 18, and an outside-surface upside and the inside are attached in the wrap heat insulation plate 39 by this silencer 38 (refer to drawing 10). This has prevented the adverse effect to the air cleaner 21 by exhaust air heat, the receipt box 26, and a dc-battery 40.

[0026] As shown in drawing 1 and drawing 2, the above-mentioned dc-battery 40 is arranged in maintenance opening 6a formed under the sheet 6, and this opening 6a can be opened and closed by carrying out desorption of the sheet 6. Moreover, the above-mentioned dc-battery 40 is offset by the silencer 38 and the V belt infinite variable-speed drive 31, and the opposite hand (left-hand side) to the car-body center line C, and, thereby, has improved weight balance on either side.

[0027] Here, it is the direction opposite hand of a crankshaft of a V belt type infinite variable-speed drive, and you may arrange under the flywheel magneto so that it may be the engine lower part about the above-mentioned exhaust pipe 37, and may pass along the upper part from an undershirt pipe. When it does in this way, the adverse effect to the inhalation-of-air system by exhaust air heat can be controlled.

[0028] Moreover, the carburetor 46 is connected to the posterior wall of stomach of the above-mentioned cylinder head 30b through the inlet pipe 45, and the above-mentioned air cleaner 21 is connected to this carburetor 46 through the air intake duct 47. This air cleaner 21 is between the left, the right seat rail 18, and 18, and is arranged under the sheet 6, and the above-mentioned dc-battery 40 and the receipt box 26 are arranged at the backside [ this air cleaner 21 ].

[0029] The belt case 51 which the belt room 50 is made to become independent of a crank case, and forms it is concluded by the right side attachment wall of the above-mentioned crank-case 30a, and the above-mentioned V belt type infinite variable-speed drive 31 is arranged in this belt room 50. This infinite variable-speed drive 31 has the structure which wound V belt 55 around the driving pulley 52 with which the right edge of a crankshaft 32 was equipped, and the driven pulley 54 with which the output shaft 53 was equipped, as shown in drawing 13 and drawing 14.

[0030] The above-mentioned driving pulley 52 is equipped with movable pulley 52b to which it moves to shaft orientations according to the centrifugal force of fast pulley 52a which fixed on the KUNKU shaft 32, and a wait 56, and the diameter of a pulley is changed. Moreover, wing 52c for air blasting is really formed in the periphery edge of above-mentioned fast pulley 52a and movable pulley 52b, and cooling air is always attracted in the belt room 50 through the cooling air installation duct 65 mentioned later by the revolution of this wing 52c during a revolution of an engine.

[0031] Moreover, the above-mentioned driven pulley 54 is equipped with fast pulley 54a fixed to the above-mentioned output shaft 53, and movable pulley 54b with which it was equipped possible [ axial directional movement ] through the centrifugal clutch 57. In addition, the output from the above-mentioned output shaft 53 is transmitted to a front wheel 8 and a rear wheel 10 through the front-wheel driving shaft 58 and the rear wheel driving shaft 59.

[0032] The cooling structure of the above-mentioned belt room 50 is explained. The above-mentioned belt case 51 is the thing of the shape of a cross-section abbreviation KO character which consists of 51f of peripheral walls surrounding side-attachment-wall 51e located in a cross direction right side edge, and the perimeter of this. Cooling air inlet 51a which is open for free passage in the above-mentioned belt room 50 is formed in the center of cross-direction abbreviation of the upper part of the 51f of the above-mentioned peripheral walls. Moreover, the air derivation openings 51b and 51c are formed in the anterior part of the 51f of the above-mentioned peripheral walls, and the back, respectively, and the cooling air derivation ducts 60 and 61 are connected to each derivation opening 51b. These each derivation ducts 60 and 61 are prolonged towards the engine upper part, join depending on the method of the right of cylinder head 30c, and they are carrying out opening of the exhaust port 62a of this unification section 62 so that it may point to near the ignition plug of cylinder head 30c.

[0033] The interior of the above-mentioned air cleaner 21 is formed by inhalation-of-air room 21a and cooling air room 21b by the septum 22 prolonged in a cross direction, and the elements 63 and 64 which filter air are arranged in each \*\* 21a and 21b here. And the above-mentioned cooling air installation duct 65 is connected to a lower part from the element 64 of the above-mentioned cooling air room 21b, and this cooling air installation duct 65 is connected to the above-mentioned cooling air inlet 51a.

[0034] Moreover, the lower part is connected to the above-mentioned carburetor 46 through the air intake duct 47 from the above-mentioned element 63 of the above-mentioned inhalation-of-air room 21a. In addition, it is not necessary to necessarily form the element 64 by the side of cooling air room 21b.

[0035] Moreover, the open air inhalation duct 66 which is open for free passage to the above-mentioned inhalation-of-

air room 21a, and the cooling air inhalation duct 67 which is open for free passage to the above-mentioned cooling air room 21b are connected to the upper wall of the above-mentioned air cleaner 21. The above-mentioned open air inhalation duct 66 is prolonged for a while ahead at slanting facing up, and is turning opening of the inhalation opening 66a of this duct 66 to the back end lower part of the above-mentioned fuel tank 5 upward (refer to drawing 4 and drawing 16 ).

[0036] Moreover, the above-mentioned cooling air inhalation duct 67 is ahead prolonged in the shape of an abbreviation straight line, and is carrying out opening of the inhalation opening 67a of this duct 67 to the back end lower part of a fuel tank 5 positively. And opening of this inhalation opening 67a and the above-mentioned inhalation opening 66a is carried out toward a direction which is arranged in the location which shifted to extent which inhalation-of-air interference does not produce in the vertical direction, and is different. Thereby, the air for combustion is supplied to an engine 30 through an air intake duct 47, a carburetor 46, and an inlet pipe 45 through inhalation-of-air room 21a of an air cleaner 21 from the open air inhalation duct 66. Moreover, the air for belt room cooling is introduced in the belt room 50 through cooling air room 21b of an air cleaner 21, and the cooling air installation duct 65 from the cooling air inhalation duct 67. And the air which cooled the inside of the belt room 50 blows off near the ignition plug of cylinder head 30c through each derivation ducts 60 and 61.

[0037] As shown in drawing 16 - drawing 18 , it is arranged above the engine 30, and the above-mentioned fuel tank 5 is the left, Bolting immobilization is carried out on each bracket 68 set up by the right front end section and the right back end section of upper pipe 15c, and 69. This fuel tank 5 comes to join upper tank 5b on ROATANKU 5a, and front end section 6a of a sheet 6 is in contact with the posterior wall of stomach of this fuel tank 5 so that this may be covered.

[0038] The crevice 70 is cut in the anterior part of the above-mentioned fuel tank 5, and steering shaft 4a of the above-mentioned steering handle 4 has inserted in the inside of this crevice 70. And the left of a fuel tank 5 and the right front end section have extended ahead from the above-mentioned steering shaft 4a. This steering shaft 4a is supported pivotably by the bearing bracket 71 constructed between above-mentioned AHHA pipe 15c and 15c, and the supporter material 72 which fixed to the above-mentioned anterior part pipe 15a (refer to drawing 4 ).

[0039] Moreover, the fuel cap 75 which opens and closes a fuel filler opening, and the fuel meter 76 which displays fuel quantity are arranged in top-face 5c of a fuel tank 5, respectively. This fuel meter 76 is a before [ the fuel cap 75 ] side, and is arranged behind the steering handle 4. Thus, since the fuel meter 76 has been arranged between the steering handle 4 and the fuel cap 75, it is easy to carry out the check of the remaining fuel in the condition of having sat down on the sheet 6, and it has become, and the steering handle 4 functions as a protection member which prevents that vegetation etc. hits the fuel meter 76 at the time of transit in the irregular ground with which vegetation grew thick, and can prevent breakage on this fuel meter 76.

[0040] Moreover, swelling formation of the reserve-well ball section 77 is carried out caudad at 5d of bases of the above-mentioned fuel tank 5, and a fuel cock 78 turns the closing motion lever 78 to a cross direction outside, and is connected to the base of this reserve-well ball section 77. It connects with the above-mentioned carburetor 46 through the fuel feeding pipe 79, and this fuel cock 78 is the left, It is arranged at the left-hand side approach between right upper pipe 15c and 15c. After this has sat down on the sheet 6, it has come to be able to carry out switching operation.

[0041] Next, the suction system which supplies air to the above-mentioned air cleaner 21 is explained. The plate-like guide plate 80 of wrap magnitude is arranged in the lower part of 5d of bases of the above-mentioned fuel tank 5 in the whole abbreviation surface of 5d of these bases. This guide plate 80 has the thermal insulation function which prevents that engine heat gets across to a fuel tank 5. This guide plate 80 is a thing made of rubber, and is the left of this, The right edges 80a and 80b are left, It is laid in the top face of right upper pipe 15c, and front end section 80c is being fixed to upper pipe 15c by the conclusion member 81. Moreover, left of the above-mentioned guide plate 80, 80d of anchoring pieces prolonged up is really formed in the right back end section, and screw stop immobilization of the 80d of this each anchoring piece is carried out at the above-mentioned bracket 69.

[0042] Moreover, into the part which attends the reserve-well ball section 77 of the above-mentioned guide plate 80, swelling formation of the saccate thermal insulation section 83 is carried out at one, and the above-mentioned fuel cock 78 is stationed in this thermal insulation section 83. In addition, it is formed in this thermal insulation section 83 so that the notching hole 82 for carrying out switching operation may carry out opening of a cock's 78 control-lever 78a to the method of outside.

[0043] Left of the above-mentioned guide plate 80, It is really formed in the cross-direction center section of the right edges 80a and 80b so that the load receptacle section 84 may project up. 5d of bases of a fuel tank 5 is supported by this load receptacle section 84, and this load receptacle section 84 part is bound tight to upper pipe 15c by the band member 85, and is being fixed.

[0044] 5d of bases of a fuel tank 5 has contacted on the above-mentioned load receptacle section 84 as mentioned

above, and the space formed between 5d of these bases and a guide plate 80 serves as an air duct 86. Opening of the front end section of this air duct 86 is carried out towards the car-body front, and opening of the back end section is carried out towards inhalation opening 66a of the open air inhalation duct 66 connected to the above-mentioned air cleaner 21, and inhalation opening 67a of the cooling air inhalation duct 67.

[0045] Moreover, the reverse [ of V characters ]-like slot 87 dented in the method of the inside of a tank is cut in 5d of bases of the above-mentioned fuel tank 5, and this slot 87 enlarges path area of the above-mentioned air duct 86. The suction system which supplies the transit wind from the front of an air duct 86 to above-mentioned inhalation opening 66a and inhalation opening 67a by this is constituted.

[0046] Next, fender structure is explained. The after [ the fenders 11 and 11 in front of the above-mentioned left and the right and the left, and the right ] fenders 12 and 12 are the left of the fender bodies 11a and 12a, respectively, it is the thing of 2 division type which comes to connect the exaggerated fenders 11b and 12b with a right rim. Moreover, elasticity resin comparatively softer than the fender bodies 11a and 12a is adopted as the exaggerated fenders 11b and 12b. the fender bodies 11a and 12a -- rigid resin -- Breakage on the exaggerated fenders 11b and 12b in the case of running the irregular ground where vegetation grew thick by this is controlled. Moreover, when the exaggerated fenders 11b and 12b are damaged, item exchange is possible, and it is advantageous in cost.

[0047] In the front face of front [ above ] fender body 11a, it is the left, It is equipped with the headlight 90 of a right couple, and this headlight 90 is directly attached in fender body 11a (refer to drawing 2 and drawing 3 ). Compared with the case where this attaches in a car-body frame through a bracket, the cutback of components mark is in drawing.

[0048] The doubling structure of the front [ above ] fender 11 and the after fender 12 is as follows. In addition, a front, since the doubling structure of the after fenders 11 and 12 is the same, only the after fender 12 is explained.

[0049] As shown in drawing 19  $R > 9$  and drawing 22 , it bends and is formed in the rim of the above-mentioned fender body 12a so that the 1st doubling section 91 may carry out opening caudad. Moreover, it bends and is formed in the common-law marriage of exaggerated fender 12b so that the 2nd doubling section 92 may be close to the top face of the above-mentioned 1st doubling section 91, and three crevices 93 open spacing in this 2nd doubling section 92, and are cut in it (refer to drawing 2 ).

[0050] Wall 91a of the above-mentioned 1st doubling section 91 which contacts wall 93a in the above-mentioned crevice 93 and this wall 93a is joined with the rivet 94. This rivet 94 is the thing of the structure which is made to extend the point of this body 95 of a rivet, and combines both the above-mentioned walls 93a and 91a by inserting the wedge member 96 in the cylinder-like body 95 of a rivet with which slit 95a was formed in shaft orientations. In addition, 97 is the washer with which the body 95 of a rivet was equipped.

[0051] Thus, since the 1st and 2nd doubling sections 91 and 92 were bent and formed in above-mentioned fender body 12a and exaggerated fender 12b, respectively, both large doubling cost can be taken, and bonding strength can be improved while being able to do a doubling activity easily. Moreover, since the rivet 94 was equipped with the washer 97, the omission of a rivet 94 can be prevented and bonding strength can be improved further. Since the above-mentioned rivet 94 has furthermore been arranged in a crevice 93, an obstruction cannot hit this rivet 94 easily and can prevent the omission of a rivet 94 also from this point.

[0052] Next, the attaching structure of a foot board is explained. Left of the lower part of the above-mentioned sheet 6, The right flank and the foot board 100 which supports crew's guide peg are specifically arranged in the outside of undershirt pipe 15b of the above-mentioned left and the right. This foot board 100 consists of a bearing bracket 101,102 of an order couple, and a plate-like body 103 of a board arranged on the top face of this bearing bracket 101,102, as shown in drawing 19 and drawing 20 .

[0053] The above-mentioned body 103 of a board is a thing made from a sheet metal, it has bead 103e for reinforcement prolonged in a cross direction, and much burring 13f for skids is formed. Moreover, protruding line 103a is really formed in the rim of the above-mentioned body 103 of a board, and the common-law marriage, respectively, crew stepped on by this and outside \*\* is prevented.

[0054] It bends and is formed in the first transition of the above-mentioned body 103 of a board, and a trailing edge so that flanges 103b and 103b may stand up up, and bolting immobilization of this each flange 103b is carried out the front at the common-law marriage of the back exaggerated fenders 11b and 12b. That is, the trailing edge is joined to the fender bodies 11a and 12a through the elastic exaggerated fenders 11b and 12b before the body 103 of a board rather than this. It is really formed in the inner surface of before [ the above ] side exaggerated fender 11b so that rib 11c may be prolonged in the cross direction, as shown in drawing 21 , and this rib 11c projects ahead so that the upper part of the above-mentioned flange 103b may be covered. It has prevented that the muddy water which was able to be wound up by the front wheel 8 by this begins to leak to the front face of the body 103 of a board in accordance with the inner surface of exaggerated fender 11b.

[0055] The above-mentioned protruding line 103a which constitutes the outer edge edge of the above-mentioned body

103 of a board is located in a cross direction outside from cross direction radial-border 8a in the maximum steering angle condition of a front wheel 8 (refer to the drawing 1919). Moreover, the above-mentioned body 103 of a board inclines for a while in the before riser, and, thereby, crew is easy to straddle at the time of downward slope transit or a slowdown to front migration of weight.

[0056] Each above-mentioned bearing bracket 101,102 welds the rectangular pipe-like stay 101b and 102b, is constituted by the bodies 101a and 102a of a bracket of a thick plate, and the above-mentioned body 103 of a board binds it tight to this each stay 101b and 102b by bolt 103f, and it is being fixed to it. In addition, the body 103 of a board may be fixed to Stay 101b and 102b by welding.

[0057] The above-mentioned left, The foot bracket 104,104 of an after couple is welded to the outside surface of right undershirt pipe 15b the front (refer to drawing 5). And the above-mentioned bodies 101a and 102a of a bracket are concluded by each of this foot bracket 104 removable by bolt 105a and nut 105b.

[0058] Moreover, the brake pedal 106 is arranged under the body 103 of a board of the above-mentioned right-hand side. This brake pedal 106 has the structure where \*\*\*\* 106c of the front end was made to project to the upper part from pedal opening 103c formed in the body 103 of a board while supporting pivotably base 106b of pedal arm 106a free [ a splash ] on the above-mentioned body 103 of a bracket. The stopper member 108 has fixed to above-mentioned pedal arm 106a, and this stopper member 108 regulates the upper part rotation location of this brake pedal 106 in contact with 103d of contact seats which protruded on the underside of the above-mentioned body 103 of a board.

[0059] in the above-mentioned body of bracket 102a first transition section, it fixes so that the support shaft 107 may project in the cross direction -- having -- \*\*\*\* -- this support shaft 107 -- base 106b of the above-mentioned pedal arm 106a -- the upper and lower sides -- it is supported pivotably rockable. Moreover, the support piece 109 prolonged up is really formed in the trailing-edge section of body of bracket 102a, the outer tube 111 of a brake cable 110 is being fixed to this support piece 109, and the inner tube 112 is connected with arm 106d fixed to base 106b of the above-mentioned pedal arm 106a. In addition, 113 is a return spring which energizes a brake pedal 106 up, and 114 is a control cable for enabling a go-aft switch a front only at the time of brake treading in.

[0060] Next, the operation effectiveness of this operation gestalt is explained. Since according to the belt room cooling structure of this operation gestalt the air cleaner 21 was formed by the septum 22 to inhalation-of-air room 21a and air-quenching room 21b and this air-quenching room 21b and the belt room 50 were connected by the cooling air installation duct 65, \*\*\*\*\* filtered by the above-mentioned air cleaner 21 can be supplied in the belt room 50, it can prevent that dust and dust invade, and the life of V belt 55 can be extended.

[0061] Moreover, since the open air installation duct 67 was connected to air-quenching room 21b of the above-mentioned air cleaner 21 and opening of the inlet 67a of this open air installation duct 67 was carried out under the fuel tank 5 A front, also when it runs underwater [ which is extent to which rear wheels 8 and 10 sink ], water hardly invades in the open air installation duct 67, it prevents trespass of the water into the belt room 50, and can prevent degradation of V belt 55.

[0062] With this operation gestalt, since opening was made to carry out in facing up and the direction which is different in it being positive while being able to shift inlet port 66a of the air intake duct 66 which is open for free passage to inhalation-of-air room 21a of the above-mentioned air cleaner 21, and inlet 67a of the open air installation duct 67 which is open for free passage to air-quenching room 21b in the vertical direction and arranging them, interference by the difference of the depression at engine manifold by the side of an engine and a belt room is avoidable, it is stabilized and cooling air can be supplied.

[0063] While according to the suction system of this operation gestalt arranging a guide plate 80 down the fuel tank 5, using space between this guide plate 80 and 5d of tank bases as an air duct 86 and making opening of the before [ this air duct 86 ] side turn and carry out ahead [ car-body ] Since opening of the backside was made to carry out inlet port 66a of the open air inhalation duct 66, and near inlet 67a of the open air installation duct 67 A transit wind can be supplied to an air cleaner 21 through this air duct 86, and the air content to an engine 30 and the belt room 50 can be secured, as a result engine power and cooling effectiveness can be improved.

[0064] Moreover, since the reverse [ of V characters ]-like slot 87 was cut in the base d of the above-mentioned fuel tank 5, the path area of an air duct 86 can be increased and the air content to an engine 30 and the belt room 50 can be increased further.

[0065] it be the left about the guide plate 80 made of the above-mentioned rubber, since projection formation of the load receptacle section 84 be carried out at one at this guide plate 80 and the fuel tank 5 be carried on this load receptacle section 84 while lay in the top face of right upper pipe 15c, large space with 5d of tank bases and a guide plate 80 can be take, and the path area of the above-mentioned air duct 86 can be increase also from this point. Moreover, since the above-mentioned load receptacle section 84 is made into the product made of rubber, an oscillation of a fuel tank 5 can be controlled with the elasticity.

[0066] Moreover, since 80d of wrap thermal insulation sections was really formed in the above-mentioned guide plate 80 for the fuel cock 78, generating of the vapor by engine heat etc. can be prevented.

[0067] Since according to the foot board attaching structure of this operation gestalt the foot board 100 was constituted from a bearing bracket 101,102 of an order couple, and a plate-like body 103 of a board and the above-mentioned bearing bracket 101,102 was concluded removable by bolt 105a and nut 105b to undershirt pipe 15b, a foot board 100 can be attached in an assembly line. Thereby, the cross direction dimension in the manufacture condition of the car-body frame 2 can be made small, and while being able to make the handling at the time of carrying easy, the paint organ bath at the time of electrodepositing can be miniaturized.

[0068] Moreover, when it collides with a stone etc. and the hood board 100 deforms during transit, the problem that item exchange of this body 103 of a board or a bearing bracket 101,102 is possible, and correction of a frame like before is needed can be avoided, and repair cost can be reduced.

[0069] With this operation gestalt, since the above-mentioned bearing bracket 102 was used also [ support / of a brake pedal 106 ], the bracket of the dedication for supporting a brake pedal 106 can be made unnecessary, and cost can be reduced.

[0070] Moreover, since protruding line 103a which constitutes the outer edge edge of the body 103 of a board was located in the cross direction outside from cross direction radial-border 8a of the front wheel 8 of the maximum steering angle condition, it can prevent that the body 103 of a board will function as a guard, for example, an obstruction is equivalent to a tire at the time of car retreat, and running-the-whole-distance nature can be improved.

[0071] Moreover, before the body 103 of a board, since the trailing edge was joined to fenders 11 and 12, the mud on which rear wheels 8 and 10 had bounded can prevent starting crew certainly a front. Moreover, since the above-mentioned body 103 of a board was joined to the fender bodies 11a and 12a through the elastic exaggerated fenders 11b and 12b from the fender body, the dimension error which is easy to produce by having enabled the attachment and detachment of the body 103 of a board on a frame is absorbable.

[0072] With the above-mentioned operation gestalt, although the case where the open air inhalation duct 66 which is open for free passage to an air cleaner 21 at inhalation-of-air room 21a, and the open air installation duct 67 which is open for free passage to cooling air room 21b were separately independent was explained, this invention is not restricted to this here.

[0073] Drawing 23 and drawing 24 are drawings showing the modification of the above-mentioned operation gestalt, and show that the same sign as drawing 14 and drawing 15 is the same, or a considerable part among drawing. This modification is an example which formed one open air duct 130 which is open for free passage to both inhalation-of-air room 21a of an air cleaner 21, and cooling air room 21b.

[0074] The above-mentioned open air duct 130 is formed by inhalation-of-air path 130a and cooling air path 130b with the bridgewall 131 which stands in a row to the septum 22 of the above-mentioned air cleaner 21, and is carrying out opening of the air inlet 132 of this cooling air path 130b, and the air inlet 133 of inhalation-of-air path 130a to the location which was able to be shifted to extent which does not produce inhalation-of-air interference in shaft orientations.

[0075] With this cooling structure, while being able to arrange reasonable even if it is the narrow tooth space of the engine upper part since the open air was introduced into both inhalation-of-air room 21a and cooling air room 21b by one open air duct 130, components mark can be reduced. Moreover, while being able to prevent trespass of dust and a contaminant, interference of a depression at engine manifold can be avoided and the same effectiveness as the above-mentioned operation gestalt is acquired.

[0076] Drawing 25 is drawing for explaining the belt room cooling structure by 1 operation gestalt of invention of claim 1, and shows that the same sign as drawing 4 and drawing 13 is the same, or a considerable part among drawing.

[0077] The car-body frame 150 of this operation gestalt arranges the tank rail 151 made from one pipe prolonged above the engine unit 3 at a cross direction, and is the left to the front end section of this tank rail 151, About anterior part DOPAIPU 152 of a right couple, it is the left to the back end section, It is the thing of structure which connected the sheet pillar 153 of a right couple. Moreover, the soffits of the above-mentioned anterior part pipe 152 and the sheet pillar 153 are connected by undershirt pipe 15b, and the seat rail 18 is connected to this AIDA pipe 15b and the sheet pillar 153.

[0078] The first portion of the above-mentioned tank rail 151 is prolonged in the shape of a straight line at an abbreviation horizontal, and crookedness formation of the section is carried out in the second half at the slanting lower part. Air inlet 151a is carrying out opening to the front end of this tank rail 151, and air-outlet 151b is carrying out opening to the back end. And the end of the cooling air installation duct 155 is connected to this air-outlet 151b, and the other end of this duct is connected to air induction inlet 51a of the belt case 51.

[0079] According to this operation gestalt, since air-outlet 151b of the back end of the tank rail 151 made from a pipe

and air induction inlet 51a of the belt case 51 were connected by the cooling air duct 155, a transit wind will be introduced in the belt room 50 with the cooling air duct 155 through the inside of this tank rail 151 from front-end air inlet 151a of the above-mentioned tank rail 151. And a front, since air inlet 151a of the above-mentioned tank rail 151 is located in a height from rear wheels 8 and 10, also when underwater transit to the extent that rear wheels 8 and 10 sink is carried out, that air inlet 151a sinks does not almost have it, it can prevent trespass of the water to the belt interior of a room, and can secure the endurance of a V belt before this.

[0080] Moreover, since the above-mentioned air inlet 151a is located in the part which cannot be easily influenced of engine heat, it can introduce air with low temperature into the above-mentioned belt room 50, and its cooling effectiveness of a belt improves, and it can secure the endurance of a V belt also from this point.

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[Translation done.]

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] It is the right side view of the four-flower vehicle for irregular ground transit by 1 operation gestalt of this invention.

[Drawing 2] It is the top view of the above-mentioned four-flower vehicle.

[Drawing 3] It is the front view of the above-mentioned four-flower vehicle.

[Drawing 4] It is the right side view of the car-body frame of the above-mentioned four-flower vehicle.

[Drawing 5] It is the bottom view of the above-mentioned car-body frame.

[Drawing 6] It is the top view of the section in the above-mentioned second half of a car-body frame.

[Drawing 7] It is the left side view of the engine guard part of the above-mentioned car-body frame.

[Drawing 8] It is the cross-section front view of the above-mentioned engine guard part (VIII-VIII of drawing 7 line sectional view).

[Drawing 9] It is the left side view showing the seat rail of the above-mentioned car-body frame.

[Drawing 10] It is the rear view of the car-body back end section of the above-mentioned seat rail.

[Drawing 11] It is the sectional view showing the cross pipe for engine mounts of the above-mentioned four-flower vehicle.

[Drawing 12] It is the sectional view showing the starter arrangement structure of the above-mentioned engine.

[Drawing 13] It is the right side view showing the V belt room cooling structure of the above-mentioned four-flower vehicle.

[Drawing 14] It is the top view of the above-mentioned V belt room cooling structure.

[Drawing 15] It is the front view of the air cleaner of the above-mentioned V belt room cooling structure.

[Drawing 16] It is the side elevation of the fuel tank of the above-mentioned four-flower vehicle.

[Drawing 17] It is the front view of the above-mentioned fuel tank.

[Drawing 18] It is the top view of the above-mentioned fuel tank.

[Drawing 19] It is the top view showing the foot board attaching structure of the above-mentioned four-flower vehicle.

[Drawing 20] It is the right side view of the above-mentioned foot board attaching structure.

[Drawing 21] the sectional view of the fender of the above-mentioned four-flower vehicle (XXI-XXI of drawing 19 line sectional view) it is .

[Drawing 22] the sectional view of the above-mentioned fender (XXII-XXII of drawing 19 line sectional view) it is .

[Drawing 23] It is the top view showing the belt room cooling structure by the modification of the above-mentioned operation gestalt.

[Drawing 24] It is the front view of the above-mentioned belt room cooling structure.

[Drawing 25] It is a side elevation for explaining the belt room cooling structure by 1 operation gestalt of invention of claim 1.

### [Description of Notations]

1 Four-Flower Vehicle for Irregular Ground Transit

2,150 Car-body frame

5 Fuel Tank

6 Saddle Riding Mold Sheet

8 Front Wheel

10 Rear Wheel

21 Air Cleaner

21a Inhalation-of-air room

21b Cooling air room

22 Septum

30 Engine  
31 V Belt Type Infinite Variable-speed Drive  
46 Carburetor  
47 Air Intake Duct  
50 Belt Room  
65,155 Cooling air duct  
66 Open Air Inhalation Duct (Inhalation-of-Air Path)  
66a Inhalation opening (air inlet)  
67 Cooling Air Inhalation Duct (Cooling Air Path)  
67a Inhalation opening (air inlet)  
151 Tank Rail  
151a Air inlet  
151b Air outlet

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[Translation done.]

\* NOTICES \*

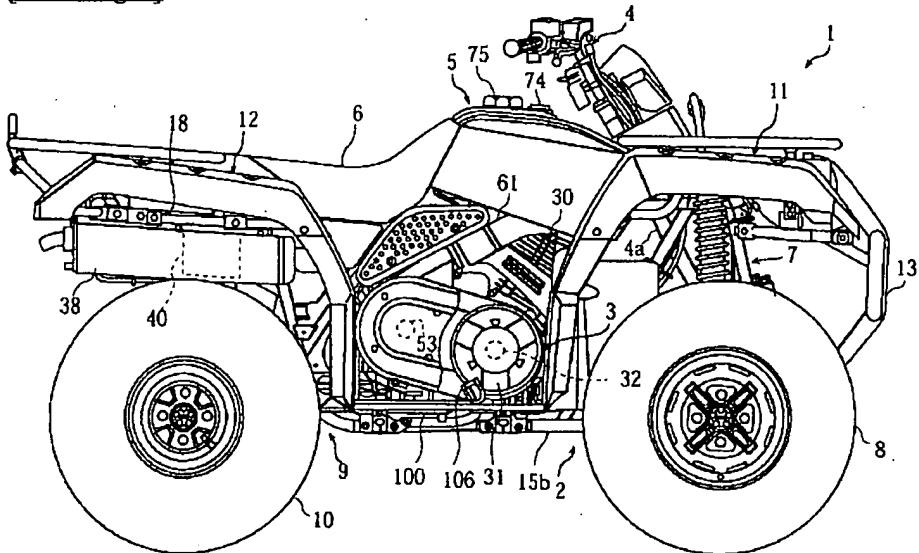
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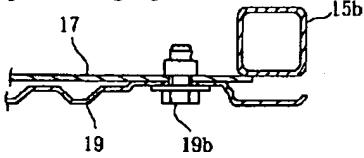
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DRAWINGS

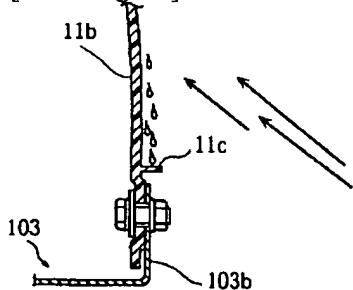
[Drawing 1]



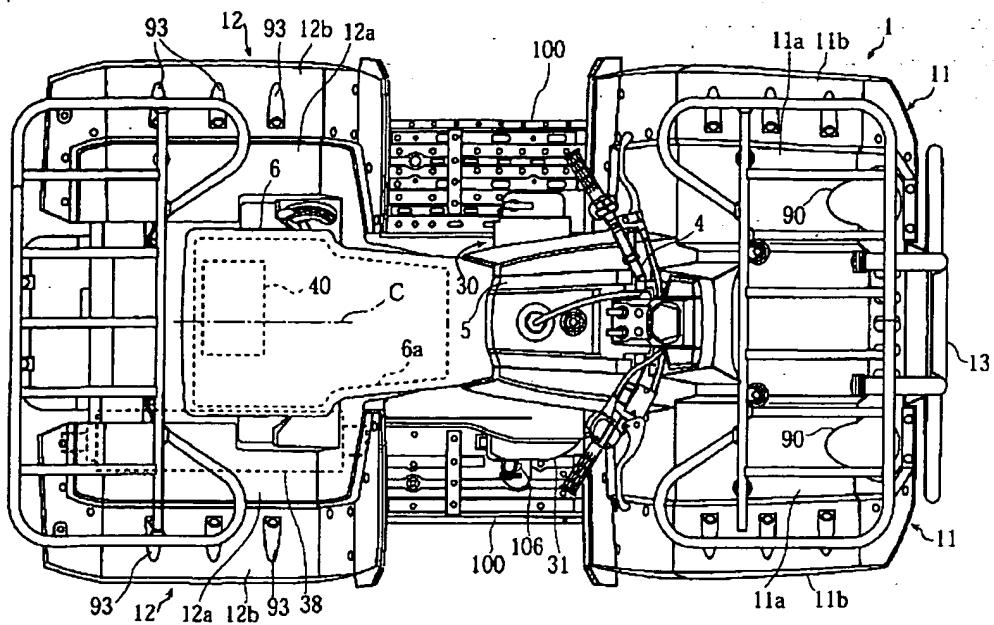
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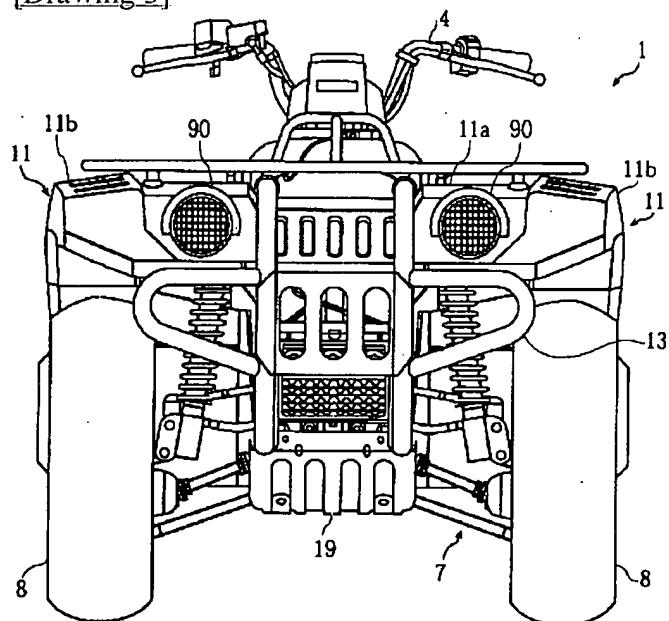
[Drawing 21]



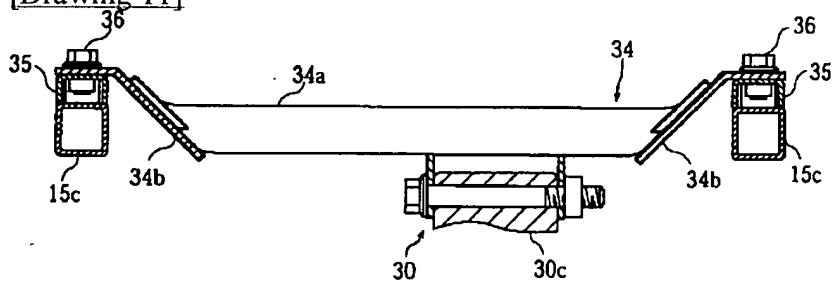
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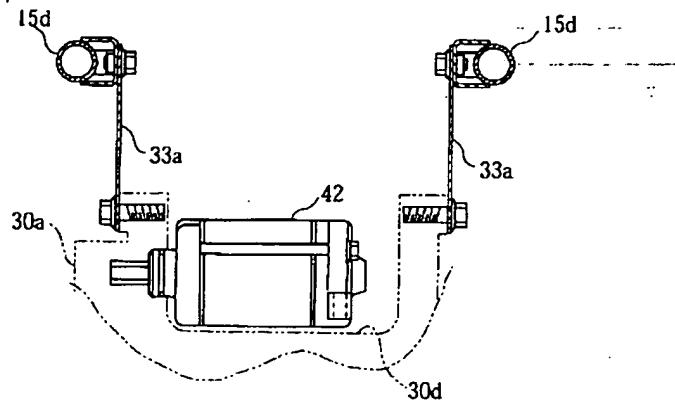
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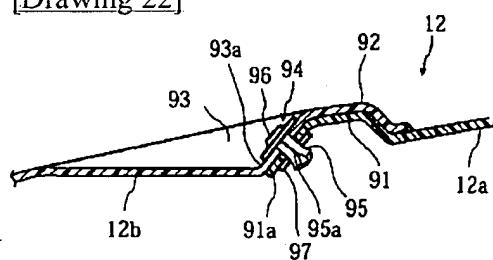
[Drawing 11]



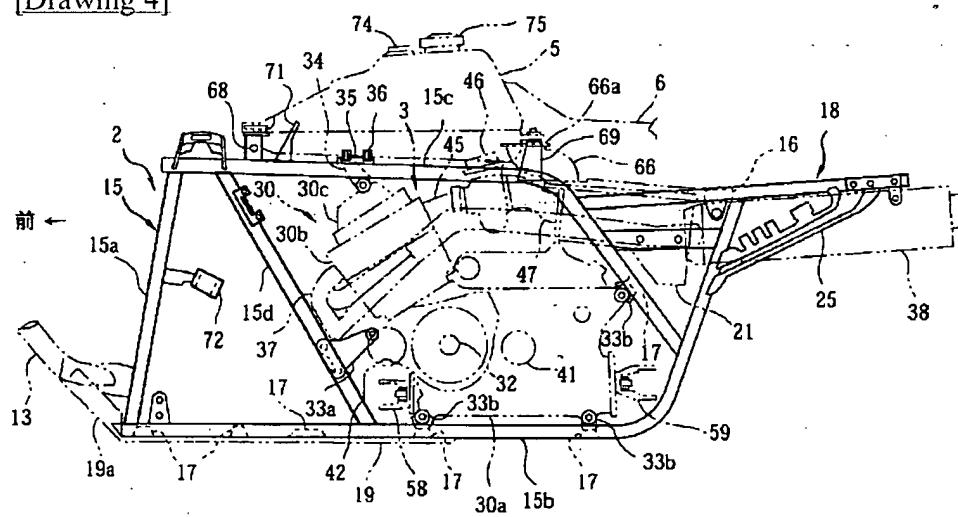
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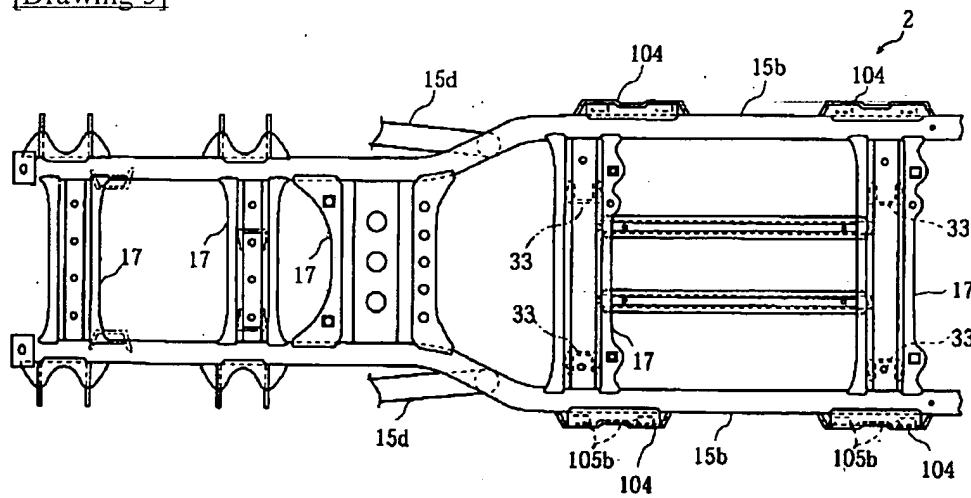
[Drawing 22]



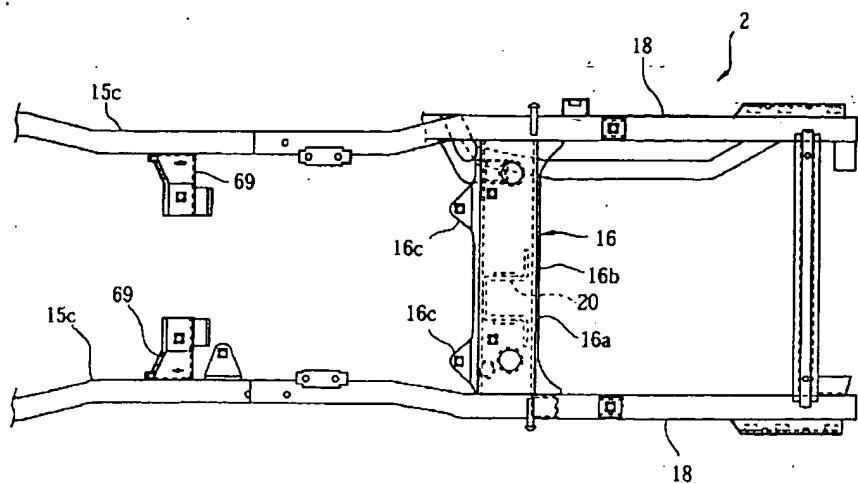
[Drawing 4]



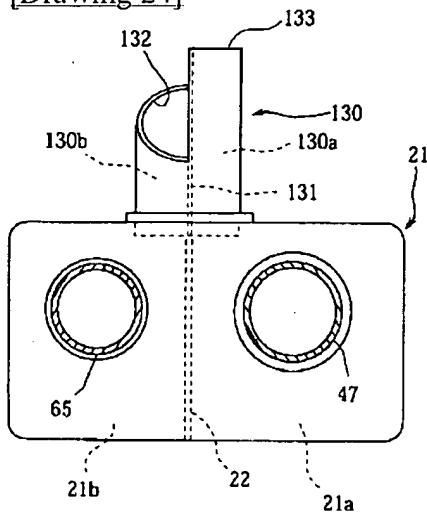
[Drawing 5]



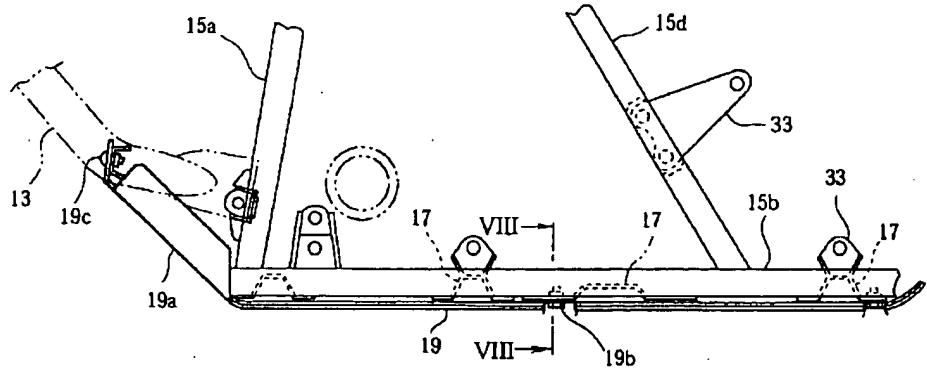
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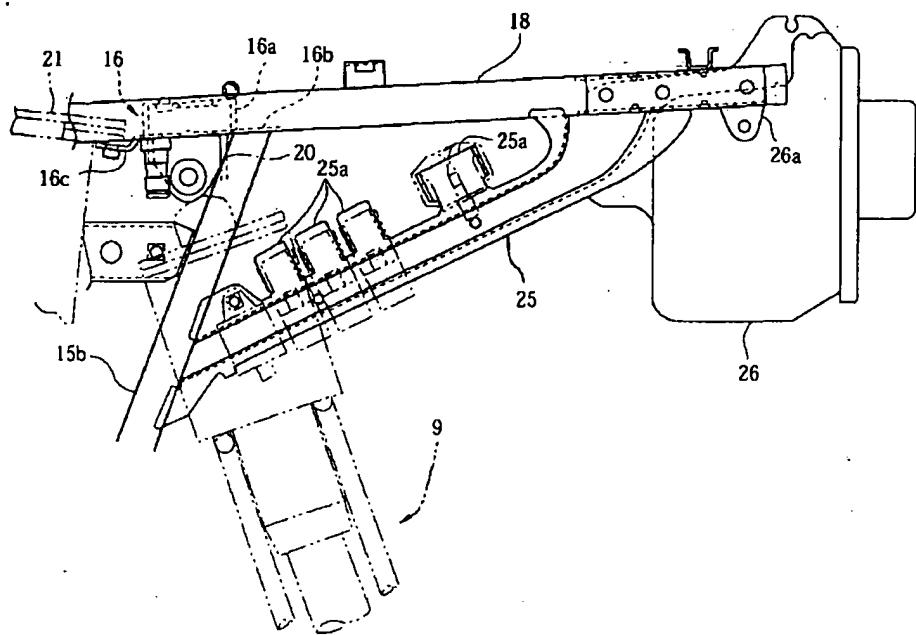
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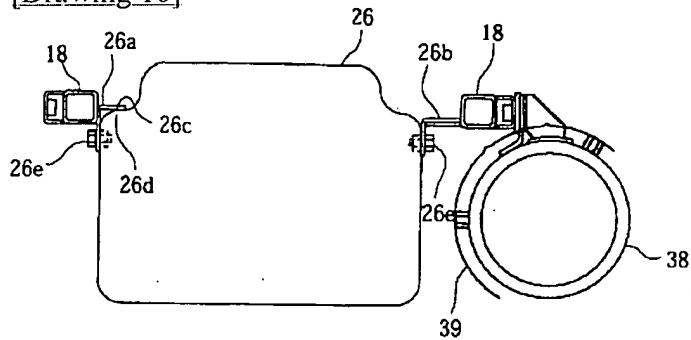
[Drawing 7]



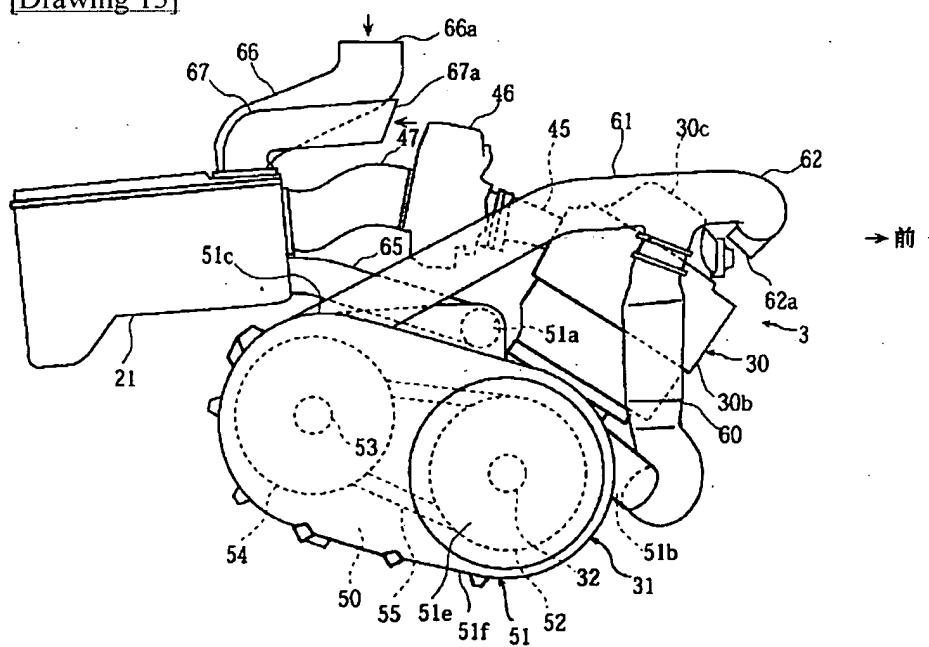
[Drawing 9]



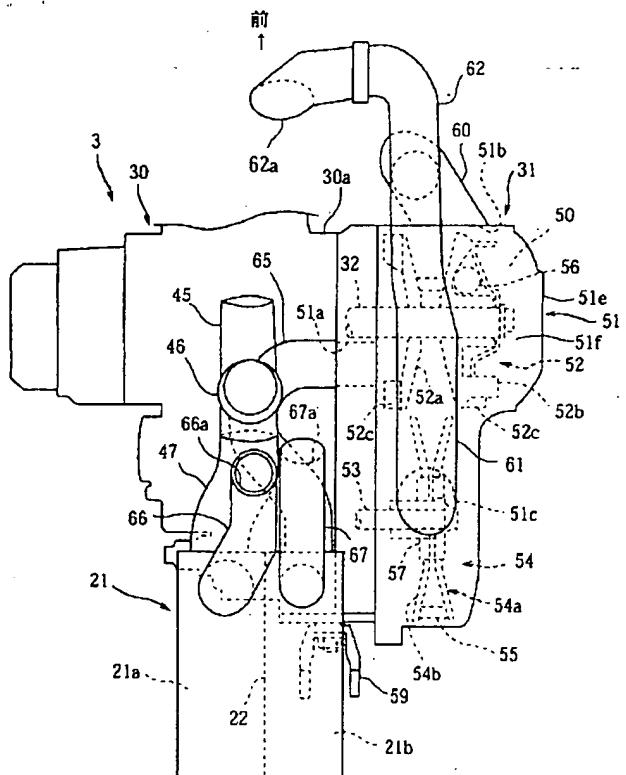
[Drawing 10]



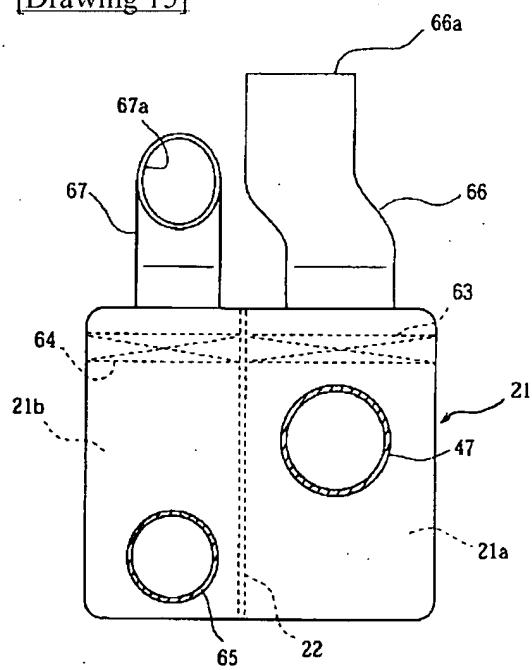
[Drawing 13]



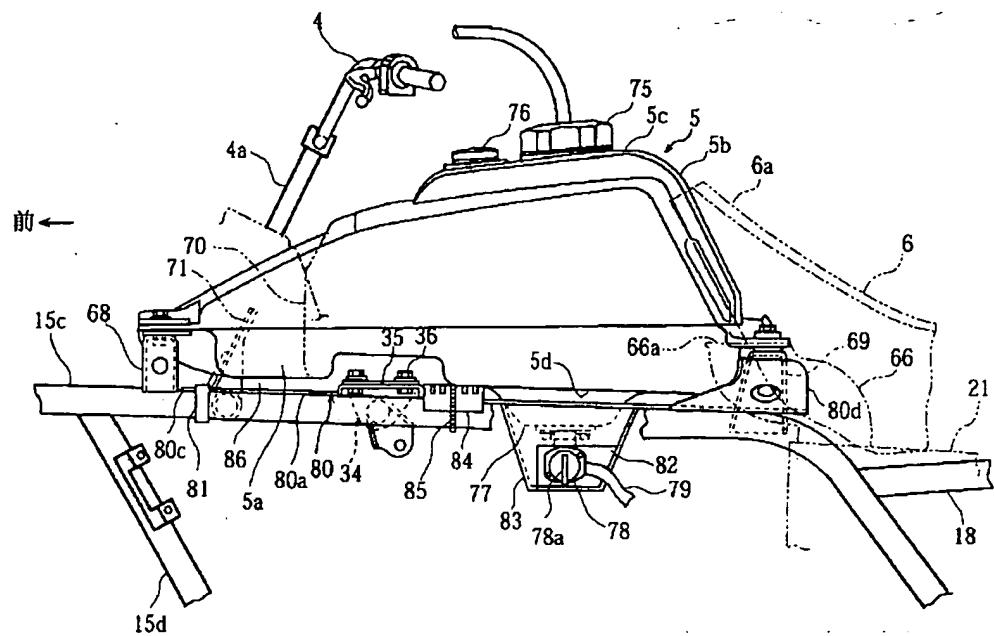
[Drawing 14]



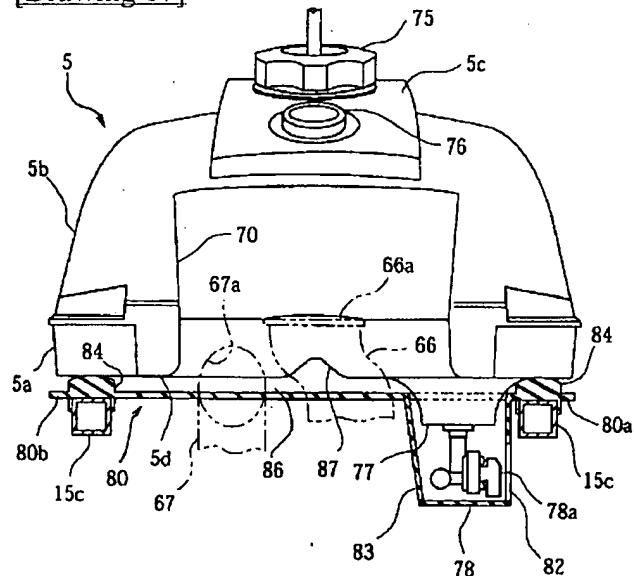
[Drawing 15]



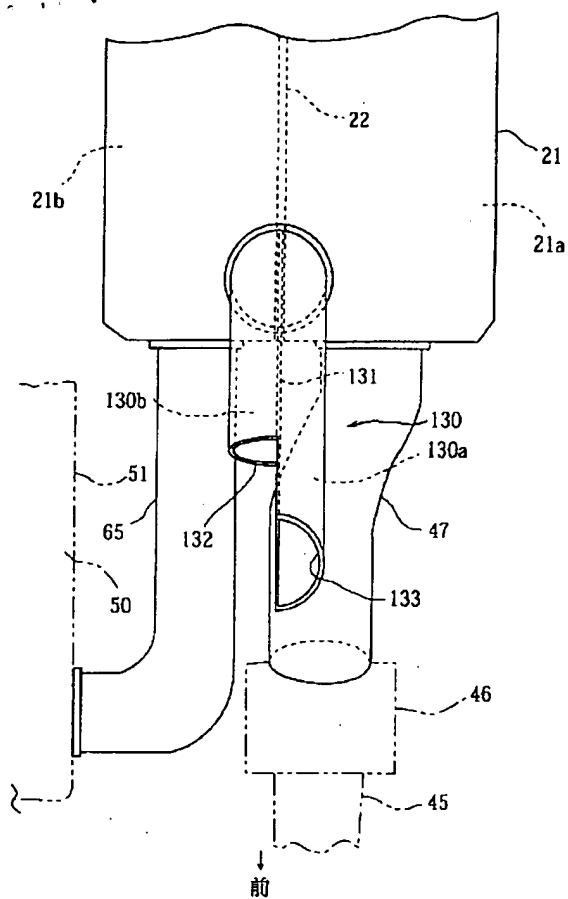
[Drawing 16]



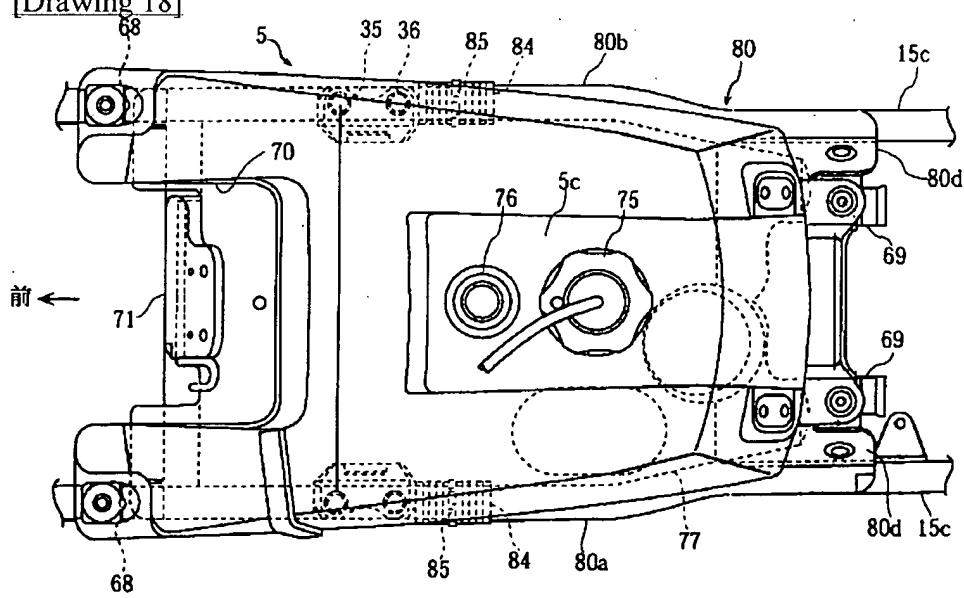
[Drawing 17]



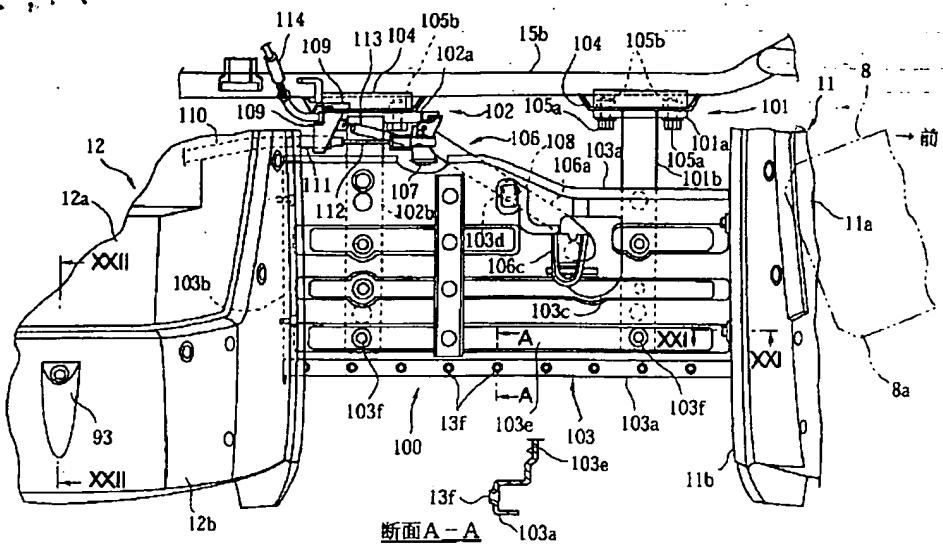
### [Drawing 23]



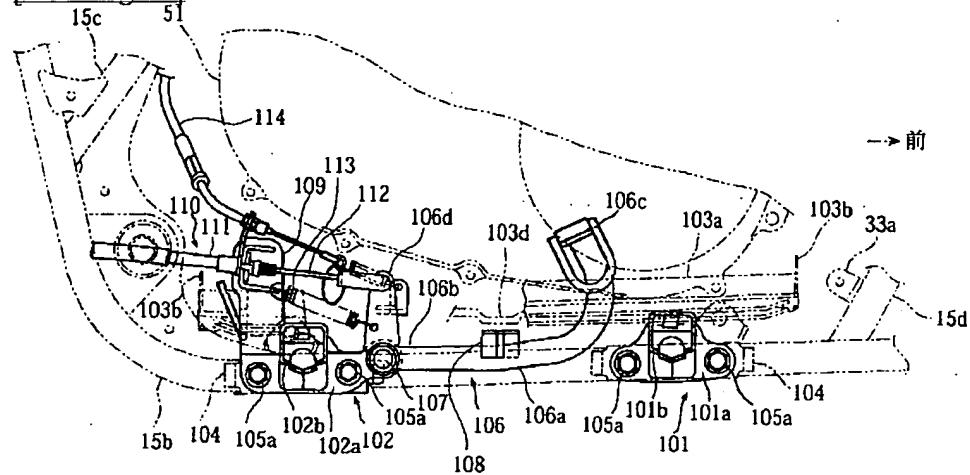
[Drawing 18]



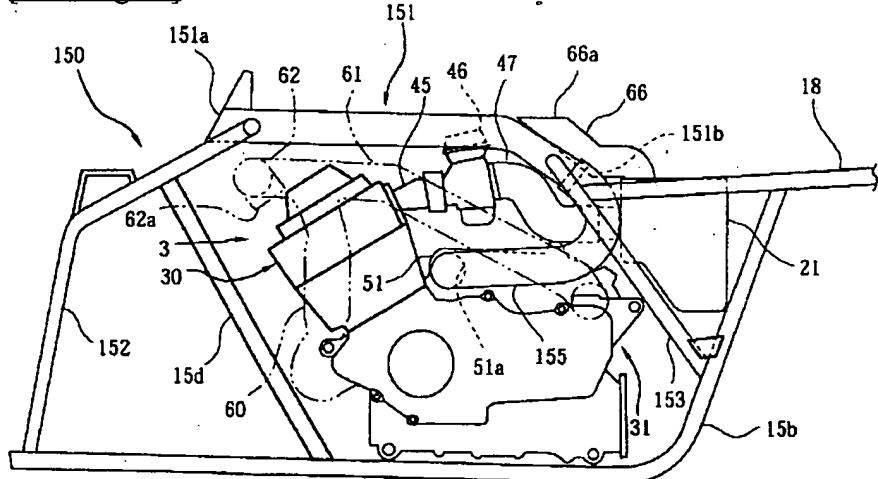
[Drawing 19]



[Drawing 20]



### [Drawing 25]



[Translation done.]